

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/00297

**Box I** Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos :  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos :  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box II** Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims 1-8 directed to a weapon having a plurality of barrel assemblies in a transportable pod; and
2. Claims 9-11 directed to a weapon having a plurality of barrel assemblies in a transportable pod wherein the barrel assemblies can be selectively aligned with respect to each other;

as reasoned on the extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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## Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

## Continuation of Box No: II

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are different inventions as follows:

1. Claims 1-8 directed to a weapon having a plurality of barrel assemblies in a transportable pod whereby the barrels can be transported to and directed at a selected target. It is considered that the feature of a plurality of barrel assemblies in a transportable, directable pod comprises a first "special technical feature".
2. Claims 9-11 directed to a weapon having a plurality of barrel assemblies in a transportable pod wherein the barrel assemblies can be selectively aligned with respect to each other so as to selectively vary the relative delivered positions of projectiles fired from different barrels at the target. It is considered that the feature of the barrels being selectively aligned with respect to each other comprises a second "special technical feature".

These groups are not so linked as to form a single general inventive concept, that is, they do not have any common inventive features, which define a contribution over the prior art. The common concept linking together these groups of claims is a weapon having a plurality of barrel assemblies in a transportable, directable pod. However this concept is not novel in the light of patent document AU 62790/94 by O'DWYER (see figure 2 for example).

Consequently the common concept or feature does not constitute "a special technical feature" within the meaning of PCT Rule 13.2, second sentence, since it makes no contribution over the prior art. Since there exists no other common feature that can be considered as a special technical feature within the meaning of PCT Rule 13.2, second sentence, no technical relationship within the meaning of PCT Rule 13 between the different inventions can be seen. Therefore, a posteriori, the claims do not satisfy the requirement of unity of invention.

## INTERNATIONAL SEARCH REPORT

International application No.

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## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: F41A 21/06, 21/48, 19/65; F41G 3/04; F42B 14/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: F41A 19/65, 21/06, 21/48; F41F; F41G 3/04; F42B 14/00; F42C 15/00, 15/02, 15/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
DWPI with keywords

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU 62790/94 A (O'DWYER) 26 September 1994 Whole document	1-8
Y	Whole document	9-11
Y	DE 3643197 A (MESSERSCHMITT-BÖLKOW-BLOHM GmbH) 23 June 1988 Whole document	9-11
Y	GB 1594686 A (RHEINMETALL GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG) 5 August 1981 Figures 2-3	1-8

☒ Further documents are listed in the continuation of Box C ☒ See patent family annex

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier application or patent but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*Z\* document member of the same patent family

Date of the actual completion of the international search

12 July 2000

Date of mailing of the international search report

19 JUL 2000

Name and mailing address of the ISA/AU

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU00/00297

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 4014192 A (MESSERSCHMITT-BÖLKOW-BLOHM GmbH) 7 November 1991 Whole document	1-8
A	AU 38985/72 (465643) B (THOMSON-CSF) 16 August 1973	

INTERNATIONAL SEARCH REPORT  
Information on patent family members

International application No.  
PCT/AU00/00297

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Parent Document Cited in Search Report				Patent Family Member			
AU	62790/94	BR	9406382	CA	2157882	CN	1120863
		EP	693172	HU	72876	SG	49815
		US	5883329	WO	94/20809	AU	23651/97
		AU	48863/99				
GB	1594686	DE	2723621				
AU	38985/72	BE	779380	CA	941347	CH	569949
		ES	399852	FR	2125701	GB	1376018
		IT	947544	NL	7201933	US	3974740
		ZA	7200674				

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 4056MET/MLA:daa	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International Application No. PCT/AU00/00297	International Filing Date (day/month/year) 7 April 2000	Priority Date (day/month/year) 7 April 1999
International Patent Classification (IPC) or national classification and IPC Int. Cl. ' F41A 21/06, 21/48, 19/65; F41G 3/04; F42B 14/00		
Applicant METAL STORM LIMITED et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																
2.	<p>This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheet(s).</p>																
3.	<p>This report contains indications relating to the following items:</p> <table border="0"> <tr> <td>I</td> <td><input checked="" type="checkbox"/> Basis of the report</td> </tr> <tr> <td>II</td> <td><input type="checkbox"/> Priority</td> </tr> <tr> <td>III</td> <td><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td><input checked="" type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td>V</td> <td><input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td>VII</td> <td><input checked="" type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td><input type="checkbox"/> Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/> Basis of the report	II	<input type="checkbox"/> Priority	III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input checked="" type="checkbox"/> Lack of unity of invention	V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/> Certain documents cited	VII	<input checked="" type="checkbox"/> Certain defects in the international application	VIII	<input type="checkbox"/> Certain observations on the international application
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VII	<input checked="" type="checkbox"/> Certain defects in the international application																
VIII	<input type="checkbox"/> Certain observations on the international application																

Date of submission of the demand 7 November 2000	Date of completion of the report 14 August 2001
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  JEFFREY CARL Telephone No. (02) 6283 2543

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU00/00297

## I. Basis of the report

1. With regard to the elements of the international application:<sup>a</sup>

☒ the international application as originally filed.

☐ the description, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of

☐ the claims, pages , as originally filed,  
pages , as amended (together with any statement) under Article 19,  
pages , filed with the demand,  
pages , received on with the letter of

☐ the drawings, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of

☐ the sequence listing part of the description:  
pages , as originally filed  
pages , filed with the demand  
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).<sup>aa</sup>

<sup>a</sup> Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

<sup>aa</sup> Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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## IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

The separate groups of invention are:

1. Claims 1-8 directed to a weapon having a plurality of barrel assemblies in a transportable pod whereby the barrels can be transported to and directed at a selected target. It is considered that the feature of a plurality of barrel assemblies in a transportable, directable pod comprises a first "special technical feature".
2. Claims 9-11 directed to a weapon having a plurality of barrel assemblies in a transportable pod wherein the barrel assemblies can be selectively aligned with respect to each other so as to selectively vary the relative delivered positions of projectiles fired from different barrels at the target. It is considered that the feature of the barrels being selectively aligned with respect to each other comprises a second "special technical feature".

These groups are not so linked as to form a single general inventive concept, that is, they do not have any common inventive features, which define a contribution over the prior art. The common concept linking together these groups of claims is a weapon having a plurality of barrel assemblies in a transportable, directable pod. However this concept is not novel in the light of patent document AU 62790/94 by O'DWYER (see figure 2 for example).

Consequently the common concept or feature does not constitute "a special technical feature" within the meaning of PCT Rule 13.2, second sentence, since it makes no contribution over the prior art. Since there exists no other common feature that can be considered as a special technical feature within the meaning of PCT Rule 13.2, second sentence, no technical relationship within the meaning of PCT Rule 13 between the different inventions can be seen. Therefore, a posteriori, the claims do not satisfy the requirement of unity of invention.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos.



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU00/00297

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims 9-11	YES
	Claims 1-8	NO
Inventive step (IS)	Claims	YES
	Claims 1-11	NO
Industrial applicability (IA)	Claims 1-11	YES
	Claims	NO

### 2. Citations and explanations (Rule 70.7)

The following documents identified in the International Search Report have been considered for the purposes of this report:

(i)	AU 62790/94	(iii)	GB 1594686
(ii)	DE 3643197	(iv)	DE 4014192

#### Novelty (N) Claims 1-8

Claims 1, 8: All of the features defined in each of these independent claims are explicitly disclosed in citation (i). For example, with reference to claim 1, the citation discloses in figures 1-3 a weapon having a plurality of barrel assemblies of the type described arranged in a transportable pod whereby the barrels may be transported to and directed at a selected target.

Claims 2-7: The minor features added by each of these claims are also explicitly disclosed in citation (i).

#### Inventive Step (IS) Claims 1-11

Claims 1-8: see above.

Notwithstanding the preceding comment, citation (iii) when combined with citation (iv), as would be obvious to a relevant person skilled in the art, discloses all of the features defined in these claims. For example, the mobile missile launcher and guidance system disclosed in citation (iv) may include multiple-projectile barrel assemblies as disclosed in citation (iii).

Claim 9: The citations do not individually disclose all of the features of this claim, but citation (i) when combined with citation (ii), as would be obvious to a relevant person skilled in the art, discloses all of the features defined in the claim.

Claims 10-11: The features added by each of these claims to the invention of claim 9 merely amount to common general knowledge and hence do not involve an inventive step.

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

Claim 1 does not comply with the requirements of Rule 6.2(a) because use of the phrase "barrel assemblies of the type described" means that the scope of the claim cannot be determined without reference to the description.

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

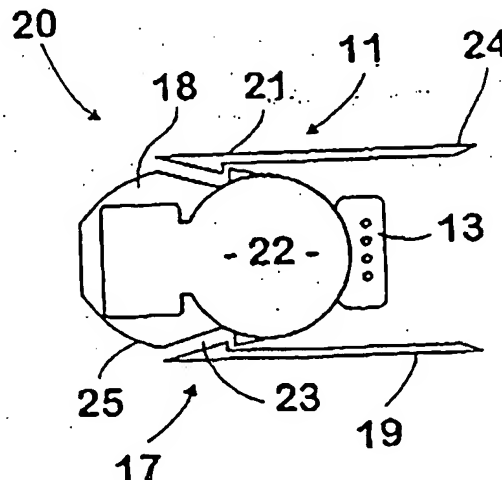

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : F41A 21/06, 21/48, 19/65, F41G 3/04, F42B 14/00		A1	(11) International Publication Number: WO 00/62005
(21) International Application Number: PCT/AU00/00297		(43) International Publication Date: 19 October 2000 (19.10.00)	
(22) International Filing Date: 7 April 2000 (07.04.00)		(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(30) Priority Data: PP 9613 7 April 1999 (07.04.99) AU PQ 3843 3 November 1999 (03.11.99) AU		Published With international search report.	
(71) Applicant (for all designated States except US): METAL STORM LIMITED (AU/AU); Level 34, 345 Queen Street, Brisbane, Queensland 4000 (AU).			
(72) Inventor; and (75) Inventor/Applicant (for US only): O'DWYER, James, Michael (AU/AU); 12 Peppercorn Street, Sinnamon Park, Brisbane, Queensland 4073 (AU).			
(74) Agent: PIZZEYS PATENT & TRADE MARK ATTORNEYS; Level 11, 167 Eagle Street, Brisbane, Queensland 4000 (AU).			

(54) Title: PROJECTILE FIRING APPARATUS

(57) Abstract

A weapon comprising a transportable pod having a plurality of barrel assemblies (10) of the type including a plurality of projectiles (11) arranged in-line within barrel (12). Each projectile (11) is associated with a discrete, selectively ignitable propellant charge (13) for propelling each projectile (11) sequentially through the muzzle of barrel (12). Each projectile (11) includes projectile body (22) which matter or objects may be transported. Projectiles (11) are arranged with one another and barrel (12) so as to prevent rearward travel of an ignited propellant charge to the trailing propellant charge. The pod can include a direction control means for selectively varying the relative alignment between barrel assemblies (10) so as to selectively vary the relative delivered position of projectile (11) fired from different barrels (12). The weapon may be used for military or civilian applications.



## FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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